

REMARKS

Claims 1-2, 4-7, and 9 are active. The final rejection of the prior Office Action date Feb. 14, 2008 is withdrawn in response to a prior filed petition. A new grounds of rejection is applied to the claims. Claims 1, 2, 4-7 and 9 are rejected under 35 USC 103 as being unpatentable over Bao in view of Carey '550 and further in view of Shi '640.

Claims 1-2, 4-7 and 9 are submitted for the Examiner's reconsideration.

Claim 1 is rejected as being unpatentable over the article by Bao, Carey '550 and Shi '640. Applicants traverse this rejection.

Amended claim 1 calls for:

In an electronic organic component, the combination comprising:
a substrate of the electronic component; and
an organic semiconductor functional layer coated on the substrate;

wherein said substrate comprises a biaxially stretched (well-ordered) plastic film such that the orderliness of the plastic film forms the applied functional layer into a well-ordered layer to thereby increase the charge carrier mobility of the coated organic functional layer. (underlining added)

The biaxially stretching of a substrate to increase the carrier mobility of a coated organic semiconductor layer on the substrate is not suggested by the cited references taken individually or in combination. The claimed device comprises a substrate and an organic semiconductor wherein the substrate is biaxially stretched to increase the charge carrier mobility of the coated functional semiconductor layer. This structure is missing in all of the cited references.

Bao is cited for teaching the substrate is commonly used and is polyethylene, but the Office Action admits that this reference does not disclose the substrate is biaxially stretched as claimed. Also this reference does not disclose a semiconductor layer adjacent to a layer of the polyethylene.

Carey is cited for teaching that it is known to provide such a polyester substrate is biaxially stretched. However, this reference discloses an isolation layer next to this substrate, not a semiconductor layer as claimed, and also is not relevant to what is claimed. The Action combines Carey with Bao, but this combination still does not suggest what is claimed. To combine Bao with Carey merely suggests that the so called substrate of Bao as having a stretched substrate as suggested by Carey now will have an isolation layer next to the stretched substrate as also suggested by Carey, not a semiconductor layer as claimed. See Carey Figs. 1 and 2 disclosing an insulating layer of SiO² layer 11, an inorganic material, not a semiconductor and plainly not an organic semiconductor as claimed.

This construction would rearrange Bao in a manner contradicting Bao. It is improper to combine references to suggest a reconstruction of the reference in a manner making the reference unsatisfactory for its intended purpose. MPEP 2143.01V and it is improper to propose a modification of a reference to change its principal of operation MPEP 2143.01VI. There is no suggestion in these references to make such a substitution apart from applicants' disclosure, and to modify the references in view of an applicants' disclosure is improper.

Shi is cited as disclosing a semiconductor deposited on a substrate and is combined with Bao and Carey. Shi points one of ordinary skill away from applicants' claim 1 and does not suggest the combination as asserted in the Action. Even if the proposed modification were proper as asserted contrary to the disclosures of the cited references to Bao and Carey as discussed above, the Action states that Shi teaches it is known to provide an organic semiconductor functional layer (64) coated on the substrate referring to Fig. 6. This is not a sufficient statement regarding the disclosure of Shi.

However, more importantly, the Action ignores the fact that Shi also discloses a uniaxially stretched orientation film 63, Fig. 6, and importantly, ignores that this uniaxially orientation film is provided to orient the organic semiconductor functional layer in a uniaxial direction. See the abstract, and col. 4, lines 51-57, stating "the orientation film acts as a foundation or seed for the organic semiconductor layer to grow or deposit uniaxially. "

See also col. 4, lines 58-67 stating:

"if a film of an organic polymeric semiconductor material with a linear [meaning uniaxially] extended π -conjugated backbone is used in the transistor, the orientation direction of the orientation film [uniaxial] is preferentially controlled such that the film of organic polymeric semiconductor material grows or deposits on top of the orientation film with extended π -conjugated backbone aligned in the source to drain direction [a uniaxial direction]." (underlining added)

See also the continuation of Shi's discussion at col. 5, lines 1-5, further emphasizing Shi's desired alignment is in the uniaxial linear source-drain direction.

Therefore, if one of ordinary skill were to biaxially stretch the Shi substrate film, it would appear to counter the Shi desired uniaxial linear orientation in the source to drain direction. Such biaxial directions appear to intuitively to conflict with the intent of Shi to improve the orientation of the semiconductor film in this direction and thus not enhance, but would appear to diminish the effectiveness of the Shi disclosure. Shi's disclosure thus conflicts with and is contrary to applicants' claim and does not suggest this structure. This is a proscribed teaching away. MPEP 2145(X)(D1) (D2) & (D3).

There is in fact no motivation to combine Shi with Bao and Carey as suggested by the Action to do what is claimed. The claim is directed to orienting the substrate biaxially. None of these cited references including Shi, which teaches a different uniaxial orientation, suggest that applicants' biaxially stretched film substrate would be advantageous to enhance the carrier mobility of a semiconductor layer. It is known in this art as demonstrated by Shi that uniaxial stretching accomplishes an enhanced orientation of the semiconductor material in a desired drain source direction. But, it is unknown in this art that biaxially stretching would offer any further advantage over uniaxially stretching of a substrate. That is applicants' contribution. Recognition of a problem with the prior art and not recognized by the prior art is an element of unobviousness. MPEP 2141.02. The claimed invention as whole must be considered. MPEP2141.02 There must be a reasonable expectation of success. MPEP 2143.02 Shi teaches otherwise.

Given that Shi discloses the advantage of utilizing a uniaxially stretched substrate to orient a semiconductor film deposited thereon to increase mobility in the source and drain direction, there is no suggestion that a biaxially stretched film would reasonably be successful to be beneficial and reasonably is counter intuitive of the action of the uniaxial arrangement of Shi. Biaxial stretching means stretching normal to the uniaxial direction of Shi and would appear to interfere with the uniaxial action of Shi's disclosure in the source drain direction and thus diminish the effectiveness thereof and not enhance it.

Applicants on the other hand have discovered that biaxially stretching provides improved mobility in the semiconductor over that of uniaxially stretching as in Shi. Shi thus teaches away from combining its disclosure with Bao and Carey to create applicants' claimed structure, which references are not relevant to the Shi disclosure for the reasons given. Teaching away is the antithesis of obviousness. Thus one of ordinary skill would not want to combine Shi with Bao or Carey because Shi teaches otherwise. Carey and Bao do not point to any problem with the Shi disclosure or that there would be any advantage in biaxially stretching the substrate of Shi in the resulting deposited semiconductor material. Claim 1 is believed unobvious over these references and thus allowable.

Method claim 5 and device claim 7 include subject matter similar to claim 1 and is believed allowable for similar reasons.

The remaining claims 2, 4, 6, and 9, depend from the independent claims and are believed allowable at least for the same reasons given for the independent claims as well as the structures or steps claimed therein not shown or suggested by the cited references. These claims are believed allowable.

Since claims 1-2, 4-7 and 9 have been shown to be in proper form for allowance, such action is respectfully requested.

Applicants request a one month extension of time to respond to the Office Action so that the time for response expires on December 6, 2008.

The Commissioner is authorized to charge the \$130 extension fee to deposit account 03 0678 or any other fees that may be due for this paper or credit the deposit account for any overpayments in connection with this paper.

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